Synopsis on

"Mobilizing Merchant's Mindset- Identifying Facilitators and Barriers of Mobile Payment Continuance Intention for Fixed Store Merchants"

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Chapter 1

Introduction

1.1-Background of the study

Recent technological advancements have revolutionized various aspects of daily life, including ticket booking, studying, socializing, gaming, entertainment, purchasing, banking finances, and bill payments (Aydin & Burnaz, 2016; Oliveira et al., 2016). Mobile phones, with their multitasking capabilities and portability, have become indispensable, offering users convenience, independence, and flexibility (Sarwar & Soomro, 2013; Karnouskos, 2004). This shift towards mobile-centric lifestyles has transformed the retail industry, with consumers increasingly using their mobile devices for purchases (Cliquet et al., 2014). In India, for instance, there has been a significant increase in mobile phone usage, with people spending around 5 hours daily on their devices in 2021, ranking fifth globally in time spent on mobile phones (EconomicTimes, 2022; Wani & Ali, 2015). The combination of smartphone proliferation and high-speed internet availability has led to the widespread adoption of online purchasing and banking, contributing to the rise of mobile payment acceptance (Shin et al., 2014; Lu et al., 2011; De Luna et al., 2017). Moreover, mobile payment systems can serve as a vital link between financially underserved populations and financial services in developing economies like India, where mobile phone ownership surpasses the number of bank accounts (Sapovadia, 2018; Patwardhan, 2018).

The current literature highlights a need for a more integrated approach to understanding technology adoption and continuance intention, emphasizing the importance of combining theoretical models for a comprehensive understanding of technology usage (Humbani & Weisi, 2019; Chong, 2013). This study aims to investigate the continuance intention for mobile payments among fixed store merchants in India, an area yet to be thoroughly examined, crucial for averting corporate failure resulting from irregular and ineffective use of emerging

technologies (Bhattacherjee & Barfar, 2011; Thong et al., 2006). Thus, confirming continued usage is essential for classifying mobile payments as successful (Thong et al., 2006). To address this, the study proposes empirically validating constructs from innovation resistance theory (IRT) and other literature-identified constructs within an integrated conceptual model combining the Expectation-Confirmation Model (ECM) with the unified theory of acceptance and use of technology (UTAUT). This integration aims to comprehensively explore mobile payment continuation intention among fixed store merchants in India to develop a conceptual model using a stimulus-organism-response (S-O-R) framework. Such a model could aid payment service providers in effectively investing resources to attract and retain users in the Indian mobile payment market, particularly among fixed store merchants.

1.2- Research Gaps

Many studies have been on mobile payments (Cao et al., 2018; Chuang et al., 2020; Chen & Li, 2017; Pal et al., 2020; Shao et al., 2019; Zhou, 2013). However, none of them has been conducted on the post-adoption behavior of mobile payments using the combination employed in the present study in the context of fixed-store merchants. Therefore, the study aims to develop a conceptual model for testing through empirical studies to contribute to the literature on mobile payment continuance intention and address the research gap. To conclude, the study has identified specific research opportunities and possible contributions to literature in the field of mobile payment systems, as mentioned in Table 1.1 given below:

Table 1.1- Research gaps identified

Research opportunities identified	Contributions to the study
1. Importance of fixed store merchant perspective on continuing use of mobile payment systems.	1. Developing a conceptual model through theoretical and empirical investigations to identify the determinants for continuing use

	of mobile payments from the perspective of fixed store merchants.
2. Identifying determinants for understanding mobile payment systems in an emerging market like India, particularly in the metropolitan setting of Mumbai.	2. Identifying facilitators and barriers for continuance intention to use mobile payments among fixed store merchants based in the Mumbai metropolitan region.
Source: Developed by author	

Although prior research has primarily focused on the intention to continue use of mobile payments (Cao et al., 2018; Chen & Li, 2017; Chuang et al., 2020; Handarkho et al., 2021; Itthiphone et al., 2020; Pal et al., 2020; Shao et al., 2019; Singh, 2020; Sun et al., 2020; Sreelakshmi & Prathap, 2020; Talwar et al., 2020; Zhao & Bacao, 2020b; Zhou, 2013); there is still scope for examining factors influencing the use of mobile payments from multiple user perspectives. Most studies on mobile payment continuance intention (Alhassan et al., 2020; Andrea & Suharto, 2020; Cao et al., 2018; Chen & Li, 2017; Duy Phuong et al., 2020; Handarkho et al., 2021; Itthiphone et al., 2020; Khatimah et al., 2019; Kumar et al., 2018; Lu et al., 2017; Nan et al., 2020; Poromatikul et al., 2019; Putri et al., 2020; Shao et al., 2019; Shelvia et al., 2020; Yuan et al., 2016; Zhao & Bacao, 2020b) have focused solely on using quantitative methods, so they cannot provide a comprehensive view on potential users' reasoning or perception towards mobile payment continuance intention, and especially the role of various factors acting as facilitators and barriers in their perception of the mobile payments. Therefore, there is a need for further research on factors influencing users' intention to continue using mobile payments both quantitatively and qualitatively.

1.3-Research Objectives and Research Questions

To achieve this goal, the following research objectives are outlined:

1. Identify the contextual factors influencing mobile payment continuance intention among fixed store merchants.
2. To empirically test and investigate the relationships between factors influencing mobile payment continuance intention among fixed store merchants.
3. To develop a comprehensive structural model based on determinants for mobile payment continuance intention among fixed store merchants.
4. To rank and determine the most significant factors influencing mobile payment continuance intention among fixed store merchants.
5. To categorize the identified factors influencing mobile payment continuance intention among fixed store merchants based on their driving and dependence power.

The subsequent research questions which attempt to address the research objectives of this study are as follows:

RQ1- What are the contextual factors influencing mobile payment continuance intention among fixed store merchants?

RQ2- How do factors influence mobile payment continuance intention among fixed store merchants?

RQ3- What is the ranking order for the significant factors influencing mobile payment continuance intention among fixed store merchants?

RQ4- Which among the significant factors are the driving and dependence factors influencing mobile payment continuance intention among fixed store merchants?

1.4-Significance and scope of the study

Traditional payment systems like cash, debit/credit cards, and Internet banking are declining due to increased mobile network penetration, prompting banks and merchants to adopt mobile payment systems (Shrier et al., 2016). However, there is a limited understanding of factors influencing mobile payment continuation intention from merchants' perspective (Dahlberg et al., 2015). This study investigates factors affecting fixed store merchants' continuance intention for mobile payments in India, which is crucial for sustaining business success (Bhattacherjee & Barfar, 2011). Mobile payments offer benefits such as increased revenue, reduced costs, and enhanced customer service, yet low adoption rates persist, especially among merchants (Liébana-Cabanillas et al., 2020). Despite mobile payments' advantages for both consumers and merchants (Dahlberg et al., 2015), adoption remains unsatisfactory (Mallat, 2007; Zhou, 2013), with limited focus on continuance intention (Shaikh & Karjaluoto, 2015; Zhu et al., 2017). This study intends to identify facilitators and barriers influencing merchants' mobile payment continuation intention, addressing a gap in research primarily focused on customer adoption (Dahlberg et al., 2008; Dennehy & Sammon, 2015). Mobile payments offer merchants innovative ways to transact business, although challenges such as technical complexities and security concerns exist (Mallat, 2007; Hayashi & Bradford, 2014). Despite these challenges, mobile payments integrate the benefits of physical and digital payment systems, offering operational efficiency and convenience (Cox & Sanchez, 2012; Kumar et al., 2017). In emerging economies like India, mobile payment adoption is rapid despite infrastructural challenges, highlighting its potential for financial inclusion and economic growth (FungRetail, 2016; BCG & Google, 2017). This study, conducted in Mumbai, aims to understand mobile payment usage among fixed store merchants, which is crucial for driving scalability and justifying investments (Accenture payment services, 2013). The study assumes merchants use third-party mobile payment applications due to their interoperability and scalability (BCG,

2017; Capgemini & BNP Paribas, 2017), focusing on proximity-based payments like QR codes, revolutionizing financial transactions (Shaw, 2014). Overall, mobile payments offer opportunities and challenges for merchants, necessitating a more profound understanding to drive adoption and usage effectively.

This chapter started with an overview and background of mobile payment use and its growing dominance in India. Due to the high penetration of low-cost internet and the availability of affordable smartphones, the Indian metropolitan city of Mumbai, also called India's financial capital, has been selected as the study location in India. In addition, it provides relevant statistics and information regarding the evolution of mobile payments and mobile internet, along with the initiatives taken by the Government of India to promote mobile payments. After discussing the use of mobile payments among fixed-store merchants, the research objectives are mentioned considering the overall goals of the present study along with research questions to address those objectives. Furthermore, this chapter provides an overview of the research gaps before discussing the significance of the study. Finally, this chapter ends with a chapter-wise structure to give a clear image of the flow of the entire thesis.

Chapter 2

Literature Review

2.1- Review of Studies on Mobile Payments Related to Merchants

Despite nearly two decades since the inception of mobile payments, adoption rates among consumers and merchants remain low compared to other payment methods (Park et al., 2019). Merchants exhibit reluctance toward mobile payments due to trust issues and concerns about costs (Altwairesh & Aloud, 2021; To & Trinh, 2021), compounded by factors like lack of system knowledge, preference for cash, implementation complexities, and investment costs with data protection concerns (Gupta et al., 2018; Moghavvemi et al., 2021). Zhao and Bacao (2021) found that merchants still prefer cash payments due to the burdensome nature of mobile payment services, and merchant decisions are often influenced by peer feedback (Altwairesh & Aloud, 2021; Shaw, 2014). Merchant-focused research on mobile payment services is deemed crucial, as merchants play a pivotal role in determining the success of digital payment systems, impacting market expansion (Singh & Sinha, 2020; Dahlberg et al., 2015). Despite some studies on mobile payment systems from the merchant perspective, a gap exists in understanding merchants' perceptions, which is critical for assessing financial inclusion and societal transformation in India (Ehrenhard et al., 2017). Challenges such as resistance to technology and complexity in tax compliance hinder mobile payment adoption, with only a small fraction of merchants utilizing such systems (Kumari & Khanna, 2017; Singh & Sinha, 2020). However, mobile payments offer cost-effectiveness, less maintenance, and the ability to serve customers remotely, which is particularly beneficial for small-scale merchants (Arango & Taylor, 2008; Singh et al., 2017). Successful implementation of mobile payment systems necessitates efforts from both customers and merchants (Markendahl et al., 2010), highlighting the importance of investigating merchants' perspectives alongside consumers' viewpoints (Petrova & Wang, 2013).

2.2- Review of Factors used in Mobile Payments literature

Advancements in technology, particularly the proliferation of affordable mobile devices and low-cost mobile internet, have made mobile payments a priority for both industry and academia, involving multiple stakeholders such as banks, financial institutions, and third-party payment service providers (Dahlberg et al., 2003; Limayem et al., 2007; Ondrus & Pigneur, 2006). However, mobile payment systems in emerging markets like India face constraints due to environmental limitations and human capabilities (Musa, 2006), compounded by concerns about financial losses and the persistent digital divide, particularly among small-scale merchants (Moorena et al., 2020). Despite these barriers, mobile payment transactions are expanding in India, necessitating understanding of factors influencing user intention for technology continuity. Existing literature reviews highlight the predominance of theoretical models like TAM, UTAUT, and DOI in studying mobile payment adoption, yet little is known about merchant adoption and the impact of changing commercial, legal, and social environments (Dahlberg et al., 2015). Reviews by Li (2018), Pal et al. (2019), and Verma et al. (2020) underscore the significance of contextual factors and theoretical frameworks such as TAM and UTAUT in studying mobile payment adoption, with factors like trust and perceived usefulness being critical determinants. However, a dearth of studies focusing on factors influencing continuation intention for mobile payments among fixed store merchants necessitating further research (More et al., 2023; Hsiao et al., 2016; Hsu & Lin, 2015). This study addresses this gap by integrating ECM, UTAUT, and IRT models within an S-O-R framework to comprehend factors influencing merchants' continuance intention for mobile payments.

2.3- Review of Theoretical Models and Frameworks Used in the Study

2.3.1- Unified Theory of Acceptance and Use of Technology (UTAUT)

To explain users' intentions and subsequent behavior towards using technology, Venkatesh et al. (2003) developed the unified theory for acceptance and use of technology (UTAUT) comprising four primary constructs: effort expectancy, performance expectancy, social influence, and facilitating conditions, with gender, age, experience, and voluntariness as moderating variables as shown in figure 2.1 given below:

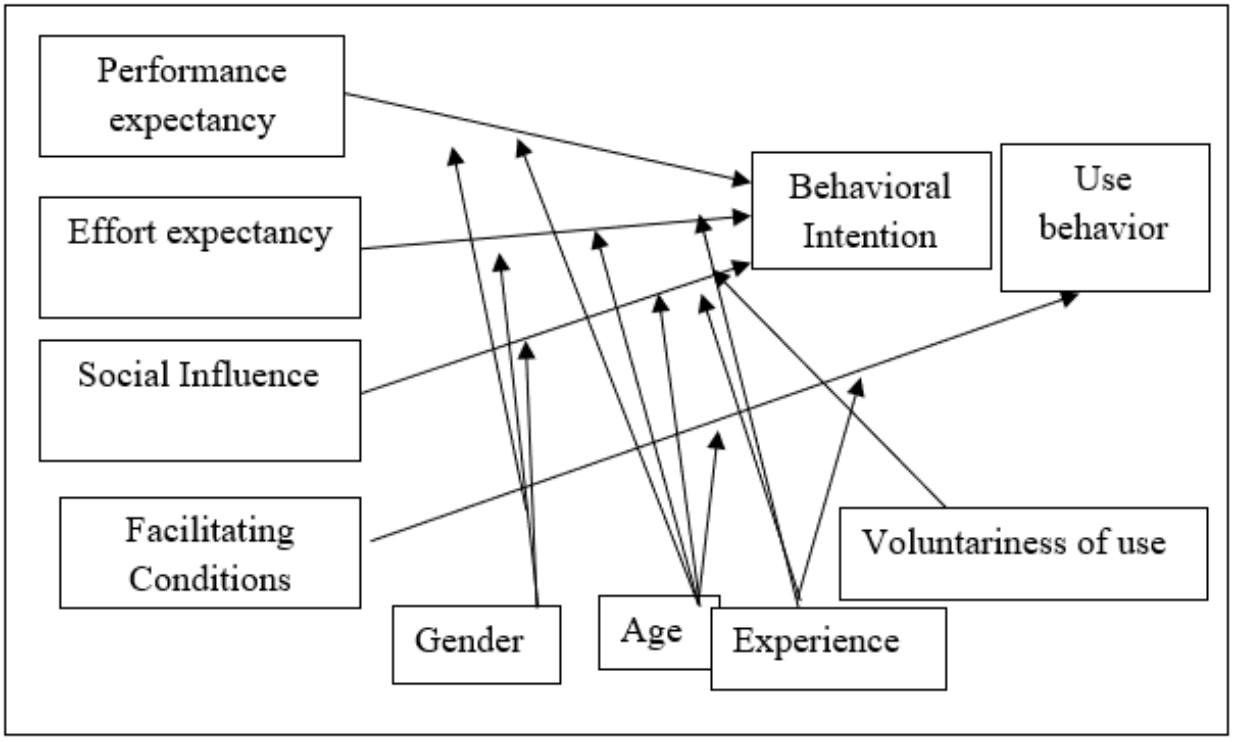


Figure 2.1: Unified Theory of Acceptance and Use of Technology (UTAUT)

2.3.2- Innovation Resistance Theory (IRT)

Ram and Sheth (1989) identified five barriers in value, usage, risk, tradition, and image to understand active resistance to information systems (IS) innovations. They gave the innovation resistance theory (IRT), showing how these five barriers influence the intention to use IS. IRT also considers these barriers into two categories: functional barriers comprising value, usage, and risk, and psychological barriers, including tradition and image. Laukkanen and Kiviniemi

(2010) conducted a study to understand the impact of banking information on the five barriers to mobile banking. They found that mobile banking information lowers the usage barrier, followed by all the other four barriers of value, risk, tradition, and image for the customers. Likewise, multiple studies have focused on mobile and Internet banking (Laukkanen, 2016; Laukkanen et al., 2008; Laukkanen et al., 2007) in the context of innovation resistance theory (IRT). Figure 2.2 showing the Innovation Resistance Theory (IRT) is given below:

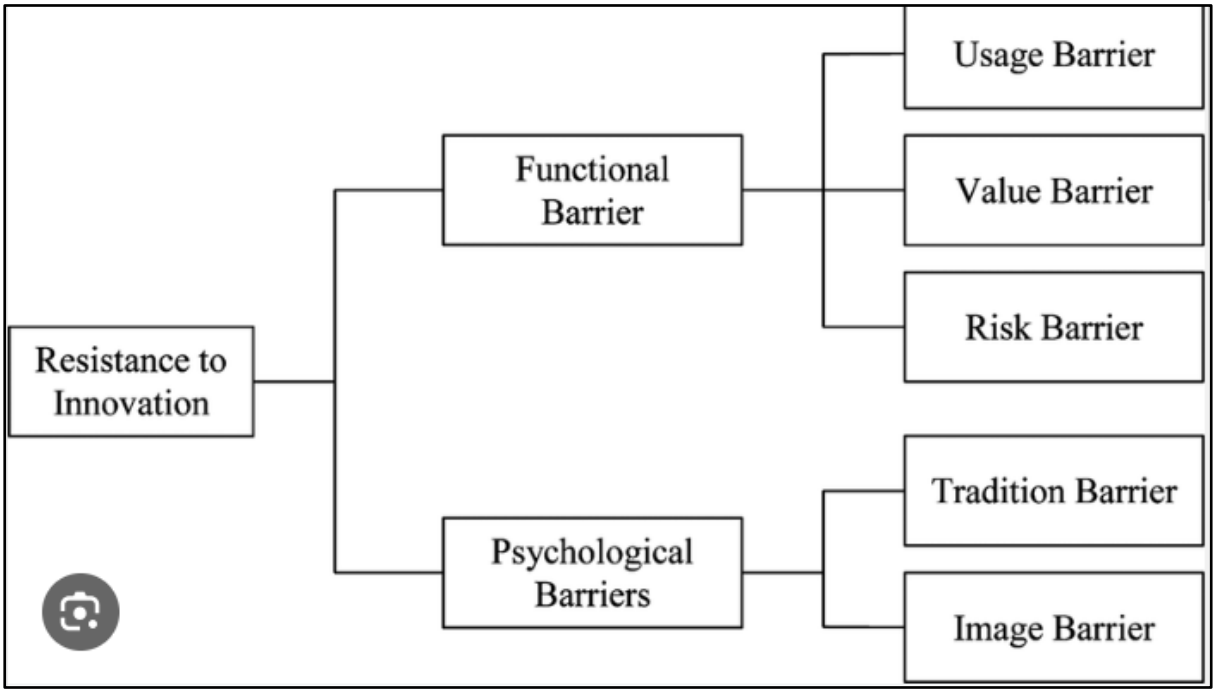


Figure 2.2: Innovation Resistance Theory

2.3.3 Dual Factor Theory (DFT)

The dual factor theory (DFT) views human behavior as a deliberate process shaped by individual beliefs and attitudes; therefore, both facilitators and barriers encourage intention to use, whereas technology rejection is represented by usage disincentive, even though the absence of inhibitors does not necessarily favor usage intention. It is also called Herzberg's motivation-hygiene theory. Many researchers have developed and advocated using DFT (Hsieh, 2016) while supporting the inclusion of new variables. It is suitable for explaining not

only the current user's intentions to continue but also the non-users intention to adopt internet services, according to Rey-Moreno et al. (2018). Literature suggests that dual-factor theory can be used to develop a conceptual framework incorporating the facilitators supporting the intention to use and barriers inhibiting the intention towards usage (Bhattacherjee & Hikmet, 2007). Figure 2.3 shows the variables considered to be facilitators and barriers within the framework of the DFT model is shown below:

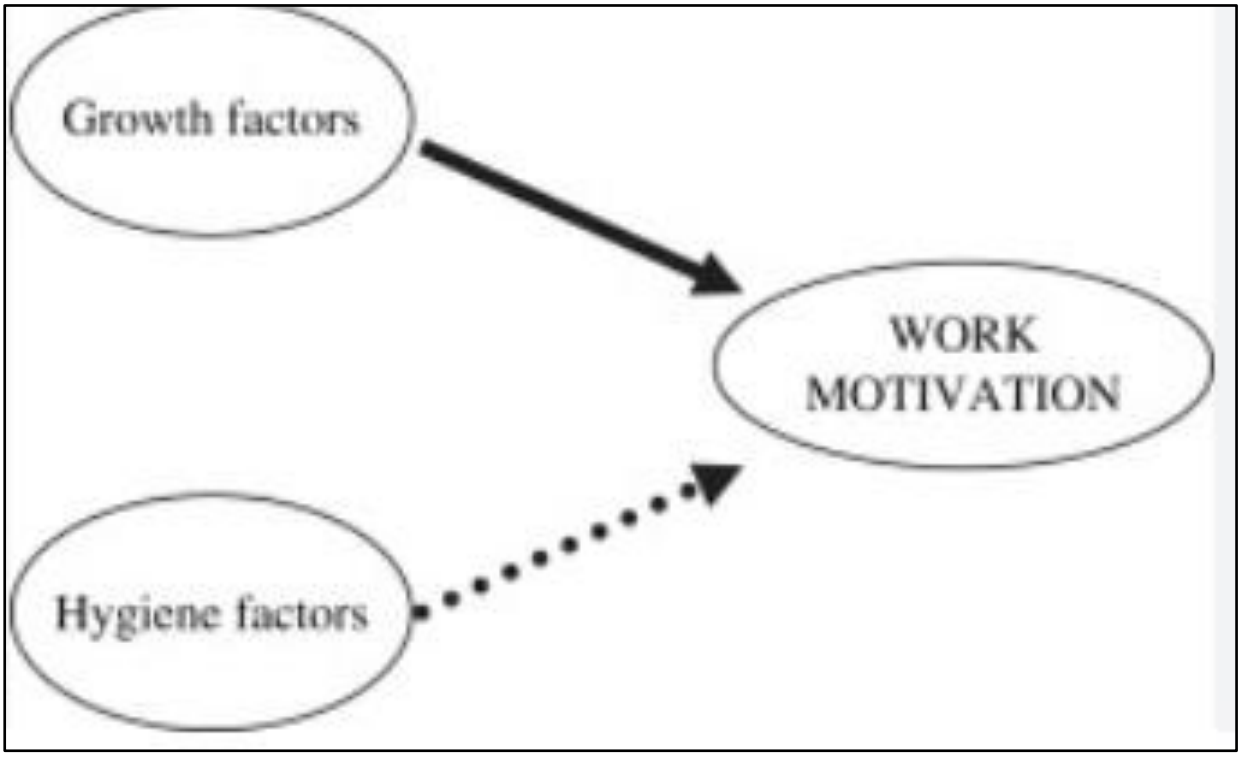


Figure 2.3: Dual factor theory (DFT)

2.3.4 Expectation Confirmation Model (ECM)

The expectation of the consumers from products or services will determine their level of satisfaction, leading towards continuous use; therefore, expectation plays a crucial role in evaluating post-consumption behavior. The present study extends the ECM by adding the construct of perceived ease of use along with perceived usefulness identified as effort expectancy and performance expectancy in the UTAUT model, respectively. Most prior studies have shown that effort expectancy is positively related to performance expectancy (Kim et al.,

2010; Liébana-Cabanillas et al., 2015). In addition, any new technology considered easy to use naturally facilitates more individual accomplishments than other technology that is not easy to use (Ashraf et al., 2014). The expectation confirmation model (ECM) given by Bhattacherjee (2001) is shown in the figure 2.4 given below:

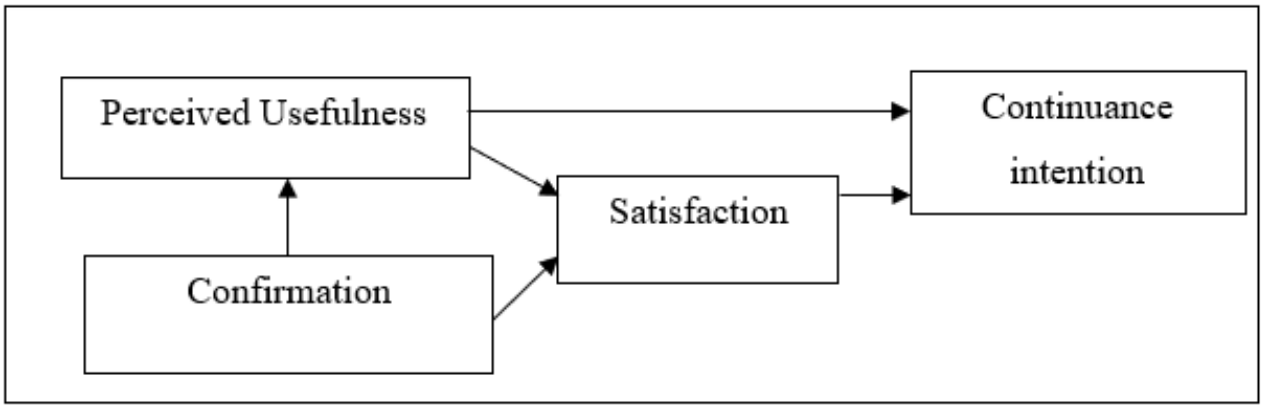


Figure 2.4: Expectation Confirmation Model (ECM)

2.3.5 Stimulus-Organism-Response (S-O-R) Framework

The S-O-R theory states that an individual's environment influences his/her perception and behavior. According to Mehrabian and Russell (1974), the environment is considered a stimulus (S), which has an impact on human emotions, i.e., the organism (O), which in turn leads to the development of organism behavior (R). The S-O-R framework helps study consumer behavior because it enables researchers to distinguish between the effects of external stimuli and the effects of the customers' thoughts and actions. Many studies have used the S-O-R framework in different contexts; for example, Peng and Kim (2014) used it for studying online purchasing behavior, whereas Liu et al. (2016) measured the effect of home page aesthetics on the satisfaction of the website visitor. Likewise, Cachero-Martnez & Vásquez-Casielles (2021) used the S-O-R framework in the retailing industry, Aslam et al. (2018) evaluated the impact of electronic word of mouth on purchase intention while Arif et al. (2020) determined the effect of user-generated content on customer behavior. Similarly, Dabbous & Barkat (2020) utilized the S-O-R framework to characterize the impact of social media on

consumers' perceptions of brands and their purchasing intent. Figure 2.5, showing the use of the S-O-R framework within the context of the present study, is given below:

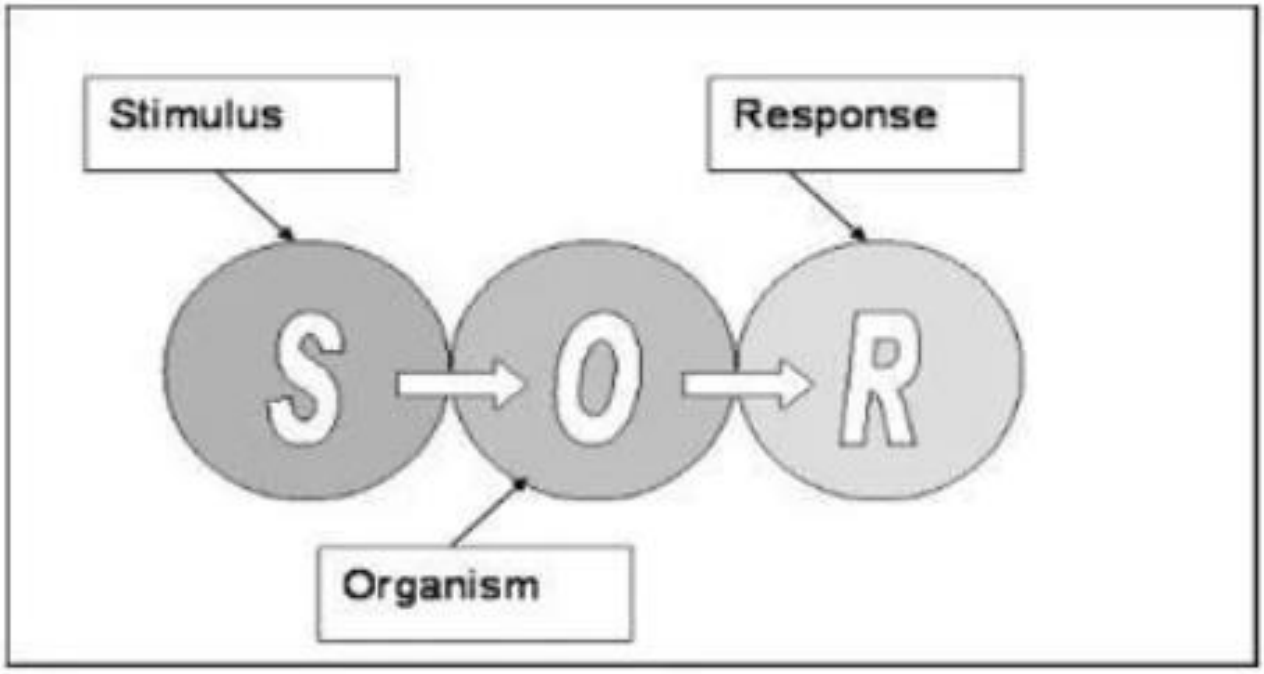


Figure 2.5: Stimulus-Organism-Response (SOR) framework

This chapter starts by explaining the research background and providing the definitions of mobile payments and the different types of mobile payments considered in the present study. After that, the chapter explores the literature on mobile payments with particular emphasis on merchants by reviewing and presenting detailed findings of the qualitative and quantitative studies conducted in different developed and emerging markets. It is followed by a review of the current scholarly work on the concept of mobile payment continuance intention, which is the central theme on which the present study is based. The main theoretical models to be used for understanding the mobile payment continuance intention for fixed store merchants include the Unified Theory of Acceptance and Use of Technology (UTAUT), Innovation Resistance Theory (IRT), Dual Factor Theory (DFT), Expectation Conformation Model (ECM) and Stimulus-Organism-Response (SOR) framework. Therefore, these models/frameworks are

reviewed to assess their suitability for mobile payments post-adoption research. After that, there is the analysis of the factors to be used as facilitators and barriers by reviewing recent studies on mobile payment usage. The facilitators include variables from the UTUAT, namely, social influence and facilitating conditions along with perceived customer value addition and perceived trust identified through the literature acting as functional facilitators and psychological facilitators. The barriers have variables from the IRT, namely, usage barrier, risk barrier, tradition barrier, and image barrier acting as functional barriers and psychological barriers. The literature review from this chapter has created the foundation for developing the theoretical framework and research hypotheses discussed in the next chapter.

Chapter 3

Development of Theoretical Framework and Hypothesis Development

3.1 Development of Theoretical Framework

Herzberg's Two-Factor Theory suggests that two sets of factors impacting satisfaction and motivation are based on hygiene factors which are extrinsic factors that, when absent or inadequate, can cause dissatisfaction, while motivators are intrinsic factors that, when present, can lead to satisfaction and motivation (Shafinah et al., 2013). Applying this theory to the context of mobile payment continuance intention, we can consider the hygiene factors as barriers and motivators as facilitators for mobile payment continuance intention among fixed-store merchants. Compared with the abundance of studies on mobile payment adoption from the consumer's perspective, the studies from the merchant's point of view are very few (Singh & Sinha, 2020). Therefore, this study can guide merchants, mobile service providers, and policymakers with theoretical guidance to better understand mobile payment technologies to achieve their strategic objectives. For companies to understand the benefits of mobile payments, it is necessary to provide information about user behavior regarding consumers and merchants and how they use emerging payment systems such as mobile payments (Xu et al., 2015). Although there are many approaches for encouraging the adoption of innovation by users, the probability of long-term usage of a new information system (IS) depends significantly on the user's continuation intention rather than initial adoption intentions (Venkatesh et al., 2011). The knowledge of user's continuation intention can benefit mobile service providers to retain users by efficiently meeting user expectations related to mobile payment systems (Hsiao et al., 2016). Therefore, this study plans to identify facilitators and barriers to the continuous usage of mobile payments among fixed-store merchants.

Despite many applicable theoretical models being good candidates for our study, we decided to use an integration of UTAUT and ECM models along with the Innovation resistance theory (Laukkanen & Kiviniemi, 2010; Sheth & Ram, 1989) because it serves our research purpose of identifying facilitators (driving factors) and barriers (inhibiting factors) for continuation intention better than using only TAM or only UTAUT having generalized constructs for determining initial adoption intention. The primary model used in this study is the ECM model given by Bhattacherjee (2001b), which addresses the original drawbacks. Few studies focus on the constructs based on the post-adoption behavior of mobile payment systems. However, studies must investigate continuance intention for mobile payment systems using constructs based on UTAUT, ECM, and innovation resistance theory (Laukkanen & Kiviniemi, 2010; Sheth & Ram, 1989). In addition, there is no investigation on mobile payment continuation intention using a combination of theories and constructs employed in this study, especially from the perspective of merchants. It aligns with Bhattacherjee (2001) suggestion that the ECM model must be applied to different technologies and contextual variables not identified in the literature. Therefore, the present study combines the additional constructs from the literature with UTAUT and IRT in an extended ECM to provide more explanatory power to the essential constructs impacting the continuous usage of mobile payment systems by fixed-store merchants.

To achieve the above objectives, the present study develops a theoretical framework integrating three empirically tested models, namely, unified theory of acceptance and use of technology (UTAUT), innovation resistance theory (IRT), and expectation-confirmation model (ECM) in a stimulus-organism-response (SOR) framework. The SOR framework suggests that external stimuli (S), internal psychological and physiological processes (O), and the resulting behavioral response (R) are all interconnected (Nikhashemi et al., 2021) in the context of mobile payment continuance intention among fixed-store merchants. The stimuli can include

various factors identified using the dual-factor theory as facilitators and barriers that influence merchants' perceptions towards continuing to use mobile payments. The organism refers to the fixed-store merchants' internal processes, attitudes, and beliefs regarding performance expectancy, effort expectancy, confirmation of expectations, and satisfaction derived from the extended expectation confirmation model (ECM). Understanding the organism provides insights into how factors identified as facilitators and barriers shape merchants' continuance intentions toward mobile payments. Lastly, the response refers to the behavioral outcome of intention to continue using mobile payments among fixed-store merchants. This continuance intention to use mobile payments is determined by the variables of the organism, including performance expectancy, effort expectancy, confirmation, and satisfaction from using mobile payments experienced by the fixed store merchants. A figure showing the proposed conceptual model developed for the present study is given below:

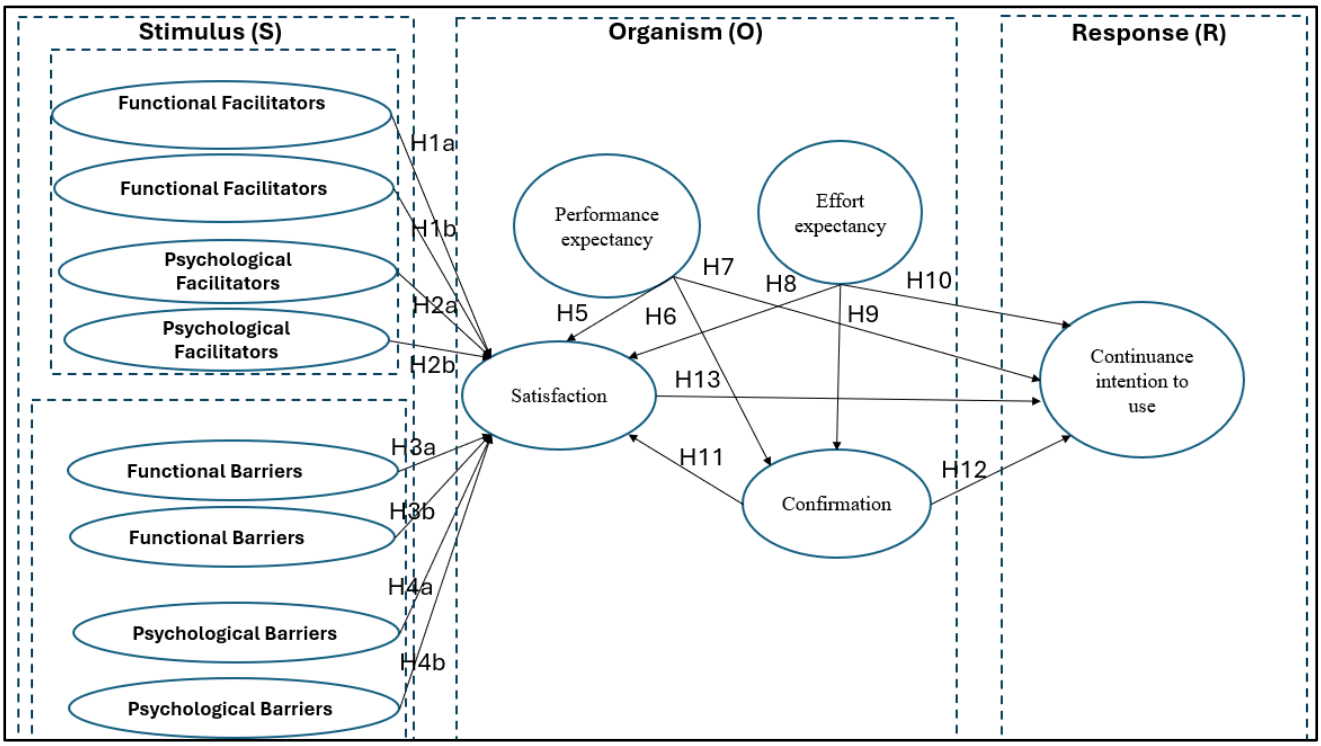


Figure 3.1: Conceptual model developed for this study

3.2 Hypotheses development

This section gives scientific reasoning concerning the theories and factors used in the conceptual model. In addition, the relationships between the conceptual model constructs are extensively explained for predicting the determinants for the mobile payment continuance intention among fixed-store merchants. These factors are hypothesized based on the existing theoretical models used in technology acceptance research. Yuan et al. (2016) employed an integrated model consisting of the Task-Technology Fit (TTF), Perceived Risk, and Technology Acceptance Model (TAM) with the Expectation Confirmation Model (ECM) to investigate the sustained intention to use mobile payments in China. Likewise, Kumar et al. (2018) utilized the Technology Acceptance Model (TAM) and Expectation-Confirmation Model (ECM), along with the additional constructs of perceived security and trust, to investigate the continuous intention to use mobile wallets in India. However, due to a lack of insight into the factors acting as facilitators and barriers that influence the frequency with which fixed-store merchants utilize mobile payments, existing models fall short of meeting the research objectives of the current study. Likewise, established theories discussed to understand the long-term use of mobile payments, including TAM, UTAUT, and the ECM, all agree that an individual's beliefs are linked to behavioral intention. The UTAUT theory suggests that individual beliefs directly affect behavioral intention (Dwivedi et al., 2019). However, other theories, such as the TAM, argue that beliefs affect an individual's behavioral intention due to the mediating effect of attitude. In contrast, the ECM emphasizes that the perceived usefulness of technological innovation based on an individual's perception can influence the behavioral intention for continuous usage. Satisfaction mediates this relationship by confirming an individual's expectations (Thong et al., 2006). Consequently, the present study employs a combination of the UTAUT, IRT, and the extended ECM to construct a conceptual S-O-R

framework of the key factors influencing mobile payment continuance intention among fixed-store merchants.

Studies on technology adoption have effectively leveraged UTAUT and ECM to explain the adoption of different technologies like mobile payment systems. Using the IRT, the basic assumption is identifying the barriers associated with consumer behavior (Laukkanen et al., 2007). For instance, the adoption of proximity-based mobile payments showed utilitarian, pleasure, and social values as facilitators, along with numerous factors as barriers conceptualized in the integrated value-risk model among consumers (Cocosila & Trabelsi, 2016). Likewise, De Kerviler et al. (2016) evaluated in-store mobile payments adoption and information search by classifying facilitators as economic benefits over utilitarianism, experiential benefits over pleasure, social values, and barriers such as privacy and financial risks. Both these studies have empirically proven the relevance of the facilitators and barriers in the context of proximity mobile payments adoption among consumers. Apart from that, customer value addition, which is the value perceived by customers based on relative performance and utility, is equally important in an online technology environment (Varki & Colgate, 2001). Additionally, developing countries need help with frequent issues such as the unavailability of Internet or smartphone from customers and merchants (Ligon et al., 2019). Therefore, firm trust in payment service providers is crucial to the system's success (Morawczynski & Miscione, 2008). In this regard, for any technology-related payments, the perceived risk becomes an important factor due to financial losses (Donovan, 2012). Assessing the impact of user differences in mobile payment adoption is of critical importance for integrating individual-level differences into mobile system design which is beneficial for understanding the interaction between them (Mallat, 2008; Ondrus & Pigneur, 2006) and therefore, the present study intends to cover merchant’s perception which may be different from a consumer’s point of view.

Chapter 4

Research Methodology

4.1 Research Method and Design

The purpose of this study is to empirically evaluate factors adapted from theoretical models that are influencing mobile payment adoption among fixed store merchants in India using a quantitative methodology such as survey through questionnaire followed by qualitative research approach like semi-structured interviews to further emphasize on development of a comprehensive conceptual framework using established theoretical models in the literature. Also, it allows triangulation to develop analysis by providing richer data and initiate a new model which emerges from widely used theoretical models in the literature. Hence, this study relies on pragmatism and uses the mixed-method approach. Since this study will be a mixed-method as per ontology and epistemology position, the researcher must choose which group of mixed-method will be suitable in the context of the study.

Out of three different mixed-method approaches given by Johnson et al., (2007), the researcher chooses mixed method-quantitative dominant wherein he/she believes in adding qualitative approach in the quantitative research project. This method helps in validating the quantitative findings through the support of qualitative research. Literature suggests that most mobile payment adoption studies are based on quantitative research methods; however, researchers believe that qualitative findings are equally important in supporting the results from quantitative techniques and therefore, this study uses mixed-method quantitative dominant approach for identifying factors impacting mobile payment adoption and continuation intention among fixed store merchants in India. Research design which refers to the comprehensive plan enacted by the researcher to answer the research question which is shown in the figure given below:

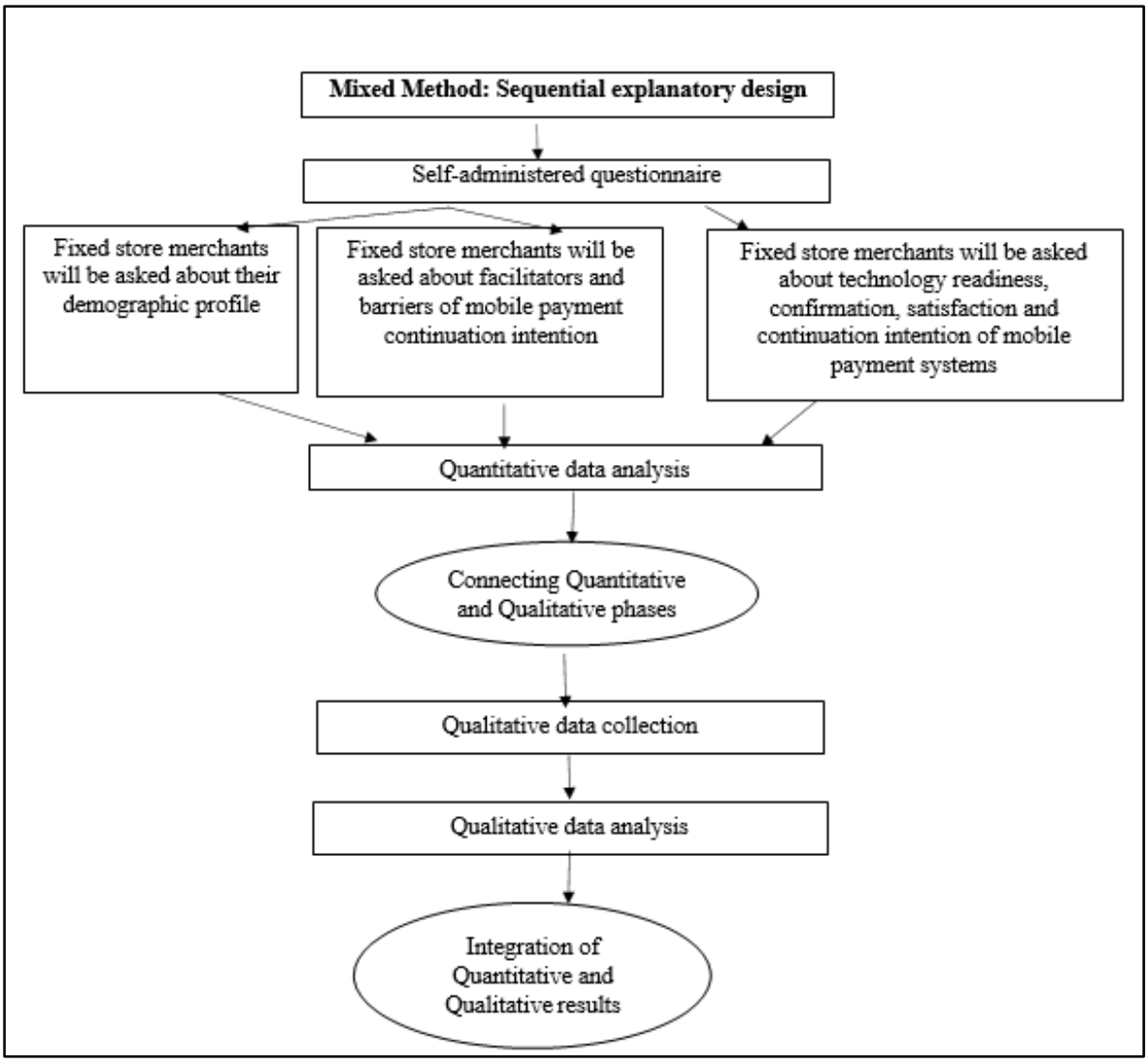

Mixed Method: Sequential explanatory design
Self-administered questionnaire
Fixed store merchants will be asked about their demographic profile
Fixed store merchants will be asked about facilitators and barriers of mobile payment continuation intention
Fixed store merchants will be asked about technology readiness, confirmation, satisfaction and continuation intention of mobile payment systems
Quantitative data analysis
Connecting Quantitative and Qualitative phases
Qualitative data collection
Qualitative data analysis
Integration of Quantitative and Qualitative results

Figure 4.1: Research design

The research strategies of a survey and experimental study are highly associated with quantitative research (Saunders et al., 2012) but experimental studies prerequisites include an exact measure of the size and the direction of the effects (Hakim & Kadarohman, 2012), on top of being less useful for exploratory or descriptive study (Sekaran & Bougie, 2013). Therefore, the survey method will be used in this study, since it allows researchers to collect quantitative as well as qualitative data on many research questions (Sekaran & Bougie, 2013) and can be appropriately used to test the relationship between variables (Saunders et al., 2012). There are several techniques for collecting data which can be classified into questionnaires, interviews,

observation, and secondary data (Sekaran & Bougie, 2013; Saunders et al., 2012). For this study, researchers will be using the questionnaire technique which has a set of preformulated questions and respondents must record their answers in closely defined alternatives like the Likert scale (Sekaran & Bougie, 2013). Also, the interview technique involves asking purposeful questions, face-to-face to the respondents, and listening to the answers carefully (Saunders et al., 2012). The researcher chooses questionnaire and interview techniques since they complement each other in the sense that the strengths of questionnaires are the weaknesses of interviews and vice-versa. Therefore, sample questionnaire and semi-structured interview techniques will be used for collecting data in this study.

This study will be using continuous data which can be checked for inconsistency or incompleteness since most variables used will be measured using a 5-point Likert scale, which can be classified as continuous data and categorized as an interval scale (Sekaran & Bougie, 2013). After that data coding will be done by identifying data points with a character or numerical score. As per research design, coded data will be divided into groups of constructs and tabulated in Excel files for entering data analysis software. For this study, the researchers will be using SPSS and SmartPLS that are widely used for data analysis due to its completeness and simplicity (Sekaran & Bougie, 2013). The measurement model will include tests for reliability (Cronbach's and composite reliability) and validity (convergent and discriminant) to investigate relationships between constructs and their indicators. The significance of the variables can be determined using structural correlation measuring simple linear relation between each predictor variable to find the extracted discriminant function. The high-value factor loading independent variables can be identified as significant contributors to the discriminant power of the function at $p<0.10$ (Hair et al., 1995). The missing values less than 5 % significance will be eliminated for generating four structural models for measuring the causal relationships between the constructs through analysis of data. The resulting structural

model will be tested by examining the coefficient of determination values, to find out factors influencing adoption and continuation intention for using mobile payment systems among fixed store merchants. This will be followed by the neural network model for ranking the relative influence of significant factors identified using PLS-SEM.

4.2 Research process

As per research design, firstly, there is review of the literature on the mobile payment adoption determinants and development of a comprehensive model combining constructs of TRI and theory on barriers within ECM framework for understanding fixed store merchant's mobile payment adoption and continuation intention in which apart from four constructs of TRI, five other additional contextual constructs were included for empirical analysis. Secondly, there is identification of other such factors having a crucial impact on fixed store merchant's mobile payment adoption and continuation intention in India using semi-structured interviews for providing comprehensive understanding of the context using mixed-method research. The researchers plan to conduct a pilot in the Mumbai region which is the capital of Maharashtra state in India. There are two main reasons for carrying out this study in and around Mumbai region, firstly, there is high probability of finding respondents who are fixed store merchants possessing an internet-enabled smartphone for banking and business-related purpose in a metropolitan city like Mumbai, and secondly, Mumbai is home to numerous tech savvy merchants from all over India, thus representing a population that is cosmopolitan in nature. Therefore, the study intends to conduct research on fixed store merchants located in and around Mumbai region. This study is beneficial for organizations, such as payment service providers, software service providers as well as third party players involved in mobile payment systems,

and therefore gets considerable attention from managers and researchers alike (Kumar & Lim, 2008; Ondrus & Pigneur, 2006).

The research process includes methodological steps and stages to address the study's objectives. In this context, the research design is a plan that intends to guide the researcher through different stages of the study strategically (Dillion et al., 1994). As a result, the research design encompasses the general approach of the research methodology along with multiple stages of research procedures and data collection techniques (Saunders et al., 2009). This study uses an explanatory sequential design approach using the questionnaire survey method (quantitative) and semi-structured interviews (qualitative) to confirm the survey findings. This approach demonstrates how multiple methodologies can be integrated into a single study to provide a more comprehensive understanding of post-adoption behavior. The study is divided into three phases based on the sequential explanatory design as follows:

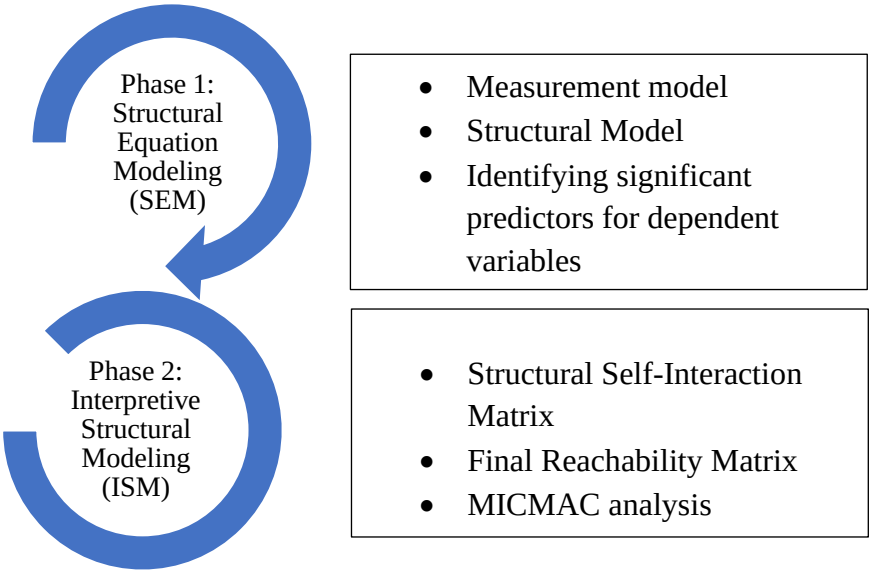
4.2.1- Phase 1- Quantitative analysis using Structural Equation Modeling (SEM)

The SEM methodology is carried out in two stages, wherein the first stage includes validating factors of the latent indicator constructs, in which confirmatory factor analysis (CFA) evaluates the measurement model, while stage two involves evaluating the procedure of structural model formulation for judging the entire model fit.

4.2.2- Phase 2- Qualitative analysis using Interpretive Structural Modeling (ISM)

The ISM methodology is based on experts' judgments for establishing contextual relationships among the different independent variables used in the study in terms of their driving and dependence powers on a graph using MICMAC analysis.

The research design pattern used in this study is presented in the figure given below:



Source: Developed by author

The study adopts numerous methods to design, develop, and evaluate the solutions in this thesis since it was not feasible to use a single methodology given the complexity and challenging nature of the research problem addressed. A combined methodology used in this study is intended to effectively ascertain the relationship between the factors acting as facilitators and barriers of mobile payment continuance intention for fixed store merchants. Lastly, to the best of researchers' knowledge and belief, the present study uses a novel integrated methodology using a hybrid of structural equation modeling (SEM) and interpretive structural modeling (ISM) for determining the factors influencing mobile payment continuance intention among fixed store merchants is the first of its kind in the Indian context. Table 4.1, given below, summarizes the methodological choices adopted by the researchers.

Table 4.1: Summary of research methodology

Research philosophy under consideration	Ontology and Epistemology – Pragmatist
Multiple perspectives using both objective observations and subjective interpretations can be valid sources using	Research questions
Research Design	Sequential Explanatory Design
Research Approach	Mixed Method- Quantitative Dominant
Data collection for quantitative analysis	1. Item used- Self-administered questionnaire 2. Sampling technique- non-probabilistic sampling
Quantitative technique for statistical analysis	Structural Equation Modeling (SEM)
Data collection for qualitative analysis	1. Item used – Semi-structured interview 2. Sampling technique- Snowball sampling
Qualitative technique for statistical analysis	Interpretive Structural Modeling (ISM)
Source: Developed by author	

Chapter 5

Data Analysis and Results

5.1- Quantitative Data Analysis using Structural Equation Modelling (SEM)

Surveys are widely used for gathering quantitative data about people's attitudes, beliefs, opinions, and behaviors for studying any specific population sample (Adu, 2019) to generalize the results from the study sample to the entire population (Knoke et al., 2017). The survey method existing between the experimental and ethnographic study designs is used extensively in business and management-related studies for two main reasons: The first reason is that they are considered the "gold standard" for establishing causal relationships (Mutz, 2011), as the data collected through survey questionnaires can be analyzed to explore the association between variables in a cause-and-effect relationship (Gill et al., 2010). The survey method can give an accurate and appropriate depiction by defining the association between variables used in the study through analytical techniques (Fowler Jr, 2013). The study's primary objective includes investigating the relationship between the identified facilitators and barriers to the continuous use of mobile payments among fixed-store merchants. Therefore, the present study appropriately considers and deploys the survey method for data collection. The second reason for choosing the survey method is the universal acceptance of the data results through appropriate sampling techniques targeted toward large populations, making it the most commonly used tool for collecting data in quantitative studies for information systems (Palvia et al., 2015). It is also evident from a systematic review of studies on mobile payments conducted by Dahlberg et al. (2015), highlighting the use of survey questionnaires by approximately 91% of the selected studies. The survey method provides control over time and costs and additional benefits like extensive research, convenience, and anonymity.

Despite numerous advantages, the survey questionnaire has few disadvantages in covering all the questions for the respondents to answer. In such cases, the researchers try to incorporate as many questions as possible in the survey questionnaire (Bhattacherjee, 2012). Also, the respondents might not answer the questions honestly, which is challenging to control, addressing the need for close observations by researchers. The sample was collected in this study using convenience sampling, with similar demographic and psychological characteristics, which may only represent part of the population (Malhotra & Birks, 2018). In conclusion, although there are some shortcomings for the survey questionnaire, it was still considered most suitable for the present study to investigate the hypothetical relationship among factors (facilitators and barriers) influencing mobile payment continuance intention. because of three main reasons: firstly, the appropriateness of the survey method due to significant population consideration; secondly, the freedom to gather a large quantity of data from the population sample (Collis & Hussey, 2013); and lastly, the usability of survey methods for measuring the behavioral intention of the sample population (Babbie & Roberts, 2018). To sum up, the questionnaire survey method permits quantitative data collection, which can be descriptive to derive inferential statistics. Therefore, factors influencing mobile payment continuance intention were explained using relevant statistical techniques based on the data collected through the questionnaire survey method.

5.1.1 Descriptive statistics

The table showing descriptive statistics of the sample is given below:

Table 5.1- Table showing descriptive statistics of the sample

Demographic profile	Frequency distribution
Gender	85.68 % Male 14.31% Female
Age	5% (0-25) years 32% (26-40) years 53% (41-65) years 10% (More than 65) years
Marital Status	84.09% Married 15.90% Unmarried
Educational Qualification	18.09% High School and Above 74.95% Diploma or Bachelor 6.95% Master or postgraduate
Level of the respondent's experience using mobile payments	34.79% (0-2) years 53.08% (3-5) years 14.11% (More than 5) years
Do you keep your business updated with the latest technology?	95% Yes 5% No
Do you prefer customers making payments through mobile phones compared to cash/card?	68% Yes 32% No
Nature of business	(15%) Restaurants/food outlets (21%) Medical stores/pharmacy (24%) General/kiranas stores (17.5%) Apparel/footwears stores (14.5%) Hardware/toiletries stores (12%) Stationary/gift stores (6%) others

5.2 Qualitative Data Analysis using Interpretive Structural Modelling (ISM)

A table showing data collection for qualitative analysis is given below:

- **Semi-structured Interview Design**
- (interview guide with prompts)

- **Data Collection – Snowball Sampling**
- (Ritchie and Lewis (2003) recommends sample size for qualitative study often lies below 50 respondents)

- **Data Reduction**
- (Experts were asked to perform a pairwise comparison between variables to examine whether there is a relationship among them)

- **Quality Check of the Qualitative Analysis**
- (Separate interviews were taken to avoid any possible influence of one's opinion on others. Each meeting lasted between 15-20 mins)

- **Data Display**
- (As suggested by Ma et al. (2019), consensus analysis was applied to eliminate merchant's subjectivity and validate the data)

- **Conclusion Drawing & Verification**
- (All the responses were reviewed, and the opinion receiving merchant's consensus was used to formulate interpretive structural modelling)

Respondents	Type of fixed store merchant	Industry
R1, R2, R3	Restaurant owners/managers	Food & Beverage
R4, R5, R6	Medical store representatives/employees	Healthcare & personal care
R7, R8, R9	Provisional store retailers/shopkeepers	Provisional/ Wholesale
R10, R11, R12	Garments and footwear shopkeepers/managers	Fashion
R13, R14, R15	Hardware shopkeepers/managers	Household appliances
R16, R17, R18	Kirana stores owners/managers	General/ kirana stores
R19, R20, R21	Stationary shopkeepers/managers	Stationary & gifts

5.2.1 Steps in ISM

The advantage of the ISM approach is that it is methodical and computer-aided to analyze all potential pairwise relations of system parts, either directly from the replies of the participants or through transitive inference. No knowledge of the underlying process is required of the participants; they merely must possess enough understanding of the object system to be able to answer the series of relational inquiries created by the computer. It generates a structured model or graphical representation of the original problem scenario that may be conveyed more effectively to others. It acts as a learning tool by forcing participants to better understand the meaning and relevance of a defined element list and connection. The ISM theory combines expert knowledge and the researcher's experience to investigate the interconnections between variables and create a structural model. This approach is crucial because it enables experts to use their judgment to elucidate the relationships between different components. The theory of

ISM leverages expert knowledge and the practitioner's industrial experience to examine the interrelationships between the variables and develop the structural model. The ISM technique is imperative as it allows the judgment of experts to explain the relationship between various components. This study aimed to identify the factors that impact the continuance intention for mobile payments and analyze the relationship between them using the ISM approach includes six steps described below:

Step 1- Identify factors acting as facilitators and barriers influencing mobile payment continuance intention, particularly among fixed-store merchants. It is based on the literature review and conceptual model developed in this study.

Step 2- Create a structural self-interaction matrix (SSIM), which depicts the pairwise relationship between the factors. Based on the judgment of experts and academicians, the contextual inter-relationship of factors was identified using criteria of X leading to chosen Y indicating the relationship. This implies asking experts if factor x influences y and vice-versa using the VAXO matrix. All the possible combinations of factors influencing continuance intention were presented, and experts were asked to specify the relationship between x and y.

Step 3- Construct the initial reachability matrix wherein SSIM is converted into a binary matrix by replacing the VAXO with 1 and 0 binary functions. The following final reachability matrix is constructed using the transitivity rule, which implies that if x is related to y and y related to z, then x should be related to z.

Step 4- After that, the partition is performed to rank the factors. It includes deriving the antecedent and reachability set from each variable of the final reachability matrix. The variables having a common antecedent and reachability set are included in the intersection set. Subsequently, variables having identical intersection and reachability sets are marked as level one in the ISM ranking as they will not have any other factor above them (Azevedo et al.,

2013). The top-level factors are excluded from the successive iterations, and this process is continued until bottom-level factors appear in the final iteration.

Step 5- The structural model is developed in this step based on the final reachability matrix and partition process. The factors extracted in the initial iterations are positioned on top, followed by factors placed downwards, corresponding to the iteration level in the partition process. The resulting diagram, a digraph, is converted into ISM to demonstrate the relationship between factors.

Step 6- Finally, Matrice d'Impacts croises-multiplication appliqúe a classment (cross-impact matrix multiplication applied to classification) abbreviated as MICMAC analysis is performed through graphical development. MICMAC analysis aims to examine the driving power and dependence power of factors. MICMAC concept is based on the multiplication features of matrices. It is done to determine the key elements that drive the system in many categories. Based on their driving power and dependency power, the variables have been classified into four groups, i.e., autonomous factors, linkage factors, dependent and independent factors.

Autonomous factors: These variables have poor driving power and weak dependency power. They are somewhat detached from the system, with which they have limited linkages; Linkage factors: These variables have significant driving power as well as strong dependency power. These factors are unstable in the fact that any action on these variables will have an influence on others; Dependent factors: These factors have modest driving power but strong dependency power; Independent factors: These factors have significant driving power but moderate dependency power. A factor with a very strong drive power, the 'key factor', belongs to independent or linking factors.

Chapter 6

Implications of the study

6.1 Theoretical Implications

Extant literature has focused on initial adoption and few studies have seldom considered post-adoption usage, which forms a critical aspect for the success of mobile service providers. There are also few studies on challenges that users face leading to either continuation or discontinuation of technology usage especially from qualitative field data on mobile payment usage. Therefore, there is an immense need for such a kind of study which can make a valuable contribution in the domain of technology adoption. The present literature mostly measures service receiver's intention to use new technology, which is a kind of behavioral construct that does not capture actual usage. Therefore, researchers must develop theoretical models for measuring continuation intention or actual usage as the dependent variable from service provider's perspective. The growing importance of shifting fixed store merchants toward cashless transaction systems poses a huge opportunity for researchers to integrate different perspectives impacting Indian digital finance reaching last mile. The challenge, however, is to find optimal behavioural framework driven by immediate tangible business value and transactional efficiencies led by smooth process function for massive adoption of digital payments both in case of consumers as well as small merchants. In addition, robust and well-substantiated quantitative as well as qualitative insights that delve into the merchant's mobile mindset are scarce in the Indian context.

6.2 Managerial Implications

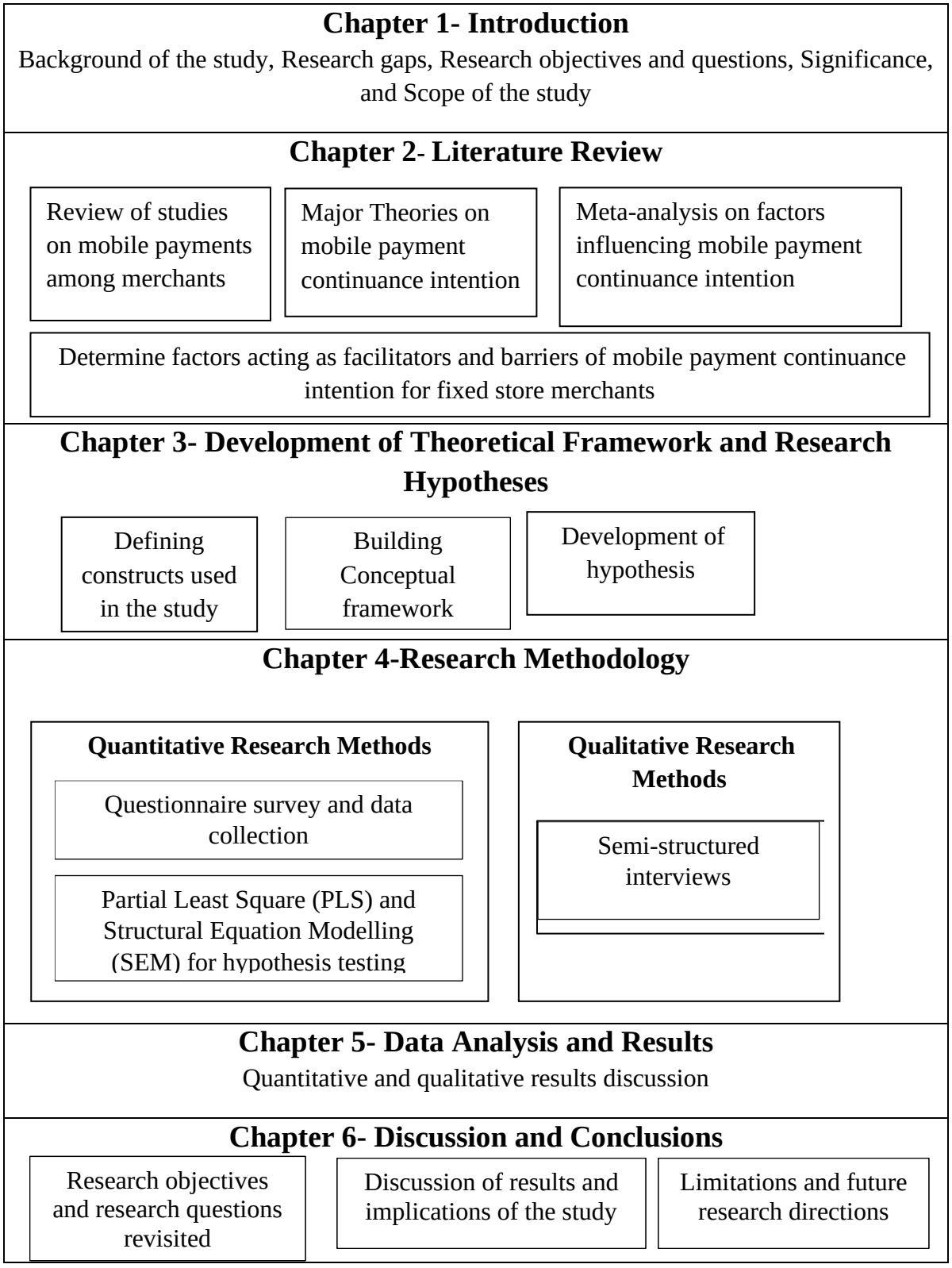
The diffusion of mobile payment technologies can facilitate merchants by providing greater customer convenience as well as efficiency into insights for other stakeholders (Kumar et al.,2017). The availability of mobile payments enables merchants to streamline the revenue operations which in turn benefits other stakeholders by allowing faster diffusion of mobile payment services among merchants. This shift can drive broader ecosystem-level changes which can, in turn, provide financial stability and economic prosperity for small merchants by creating new operational efficiencies leading to greater financial accessibility. Also, the study highlights issues and challenges faced by fixed store merchants for adopting and continuous use of mobile payment technology. With the advancement in technology and expansion of digital payment networks, the net benefit of adopting mobile payment solutions is bound to grow, and therefore it is necessary to understand what factors facilitate these merchants, besides infrastructural challenges arising out of this transition. The study offers one step for delivering new digital propositions to small businesses in a demand centric approach which is the need of the hour. The study offers managerial implications for mobile payment services companies developing an application which is providing value-added services that is both user friendly and compatible from the viewpoint of fixed store merchants.

6.3 Practical implications

Recent ground-level studies among merchants in India have found preference for cash transaction owing to transaction costs and limited benefits offered by digital payments resulting into lesser interest in adopting such new technology platforms. Regulatory bodies in India must ensure that they can overcome constraints such as assuring hassle-free transactions and security for resolving disputes and fraud in case of people who are cash dependent. The factors

identified in this study can help in designing mobile payment solutions for third party service providers incorporating reduced transaction costs and other benefits while promoting to merchants. Additionally, there are drawbacks in available products that need to address for providing real business value to merchants and lots of changes need to be incorporated through specific interventions by policymakers, innovators, and facilitators to facilitate the recent push towards multiple stakeholder digitization initiative. Despite looming anxiety triggered by economic reforms in the form of GST and demonetization, there is still overwhelming hunger for growth among fixed store merchants which had beckoned policymakers and governments to create digital ecosystem for mobile access through subsidies, innovative financial models having intuitive platforms like mobile payment systems that can help new users such as fixed store merchants for building capabilities of adoption and continuous use.

A figure showing the chapter-wise flow of the entire thesis is given below:


Chapter 1- Introduction
Background of the study, Research gaps, Research objectives and questions, Significance, and Scope of the study
Chapter 2- Literature Review
Review of studies on mobile payments among merchants
Major Theories on mobile payment continuance intention
Meta-analysis on factors influencing mobile payment continuance intention
Determine factors acting as facilitators and barriers of mobile payment continuance intention for fixed store merchants
Chapter 3- Development of Theoretical Framework and Research Hypotheses
Defining constructs used in the study
Building Conceptual framework
Development of hypothesis
Chapter 4-Research Methodology
Quantitative Research Methods
Questionnaire survey and data collection
Partial Least Square (PLS) and Structural Equation Modelling (SEM) for hypothesis testing
Qualitative Research Methods
Semi-structured interviews
Chapter 5- Data Analysis and Results
Quantitative and qualitative results discussion
Chapter 6- Discussion and Conclusions
Research objectives and research questions revisited
Discussion of results and implications of the study
Limitations and future research directions

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